

REMARKS

In view of the above amendments and filing remarks, reconsideration of the rejections contained in the Office Action of May 13, 2005 is respectfully requested.

It is noted that by the above amendments and number of minor editorial changes have been made have been to the specification and abstract so as to generally improve the form of the present application.

It is further noted that the above claims include new claims 19 and 20. In addition to those previously indicated, claims 19 and 20 also read upon the elected species.

In the Office Action, claims 17, 18, 2 and 9 were rejected as being anticipated by JP 257189 to Yusuke (Yusuke). Claims 4, 7, 11 and 13-15 were also rejected as being unpatentable over Yusuke in view of VanSweden. However, it is respectfully submitted that the present invention, particularly is now set forth in claims 2, 4, 7, 9, 11, 13-15 and 17-20, clearly patentably distinguishes over both Yusuke and VanSweden.

The present inventors have recognized that in prior art electromagnetic suspension systems, in the case of a lateral force that acts on an extensible member, a number of problems can arise. One of the cylindrical members can strongly press the other so that sliding resistances are generated between the magnet and the coil provided in the cylindrical members. This prevents smooth operation of the extensible member. If the space between a magnet and the coil is radially increased to avoid this problem, the gap between the magnet and the coil increases, so that the electromagnetic force lowers and there is a corresponding increase in power consumption. If the extensible member is increased in stiffness to try to resolve this problem, it results in an undesirable increase in both the size and weight of the extensible member. The present invention has resolved these problems.

Thus, the present invention provides an electromagnetic suspension system having an extensible member including a cylinder and a rod capable of displacement relative to the cylinder. A first cylindrical member is connected to the rod so as to be prevented from moving relative to the rod in the axial direction of the rod. Either one of a coil member and a magnetic member is provided with the first cylindrical member. A second cylindrical member is connected to the cylinder so as to be prevented from moving relative to the cylinder in the axial direction of the cylinder. The other of the coil

member and the magnetic member is provided in the second cylindrical member, with a second cylindrical member facing either one of an innerside and an outerside of the first cylinder member. The first cylindrical member and the second cylindrical member are arranged to have at least one of the first cylindrical member capable of radial movement or rocking movement relative to the rod and the second cylindrical member capable of radial movement or rocking movement relative to the cylinder.

As an example, note Fig. 9. A universal joint mechanism 35h comprises a collar 22 having a flange 22a, and an opening 75 that is formed in an outer-yoke pipe cover portion 20, as well as a shoulder portion 21 of the piston rod 5. Radial movement of the piston rod 5 relative to the outer-yoke pipe 13 (the outer yoke 16) is thus permitted, while axial movement of the outer-yoke pipe 13, and thus the outer yoke 16, is restricted.

Also note for example, spherical surfaces 83 and 89 which allow rocking movement of the yoke 17 relative to the inner and outer tubes 9 while maintaining their relative axial position.

The Examiner cited Yusuke as having a connection that “permits and is capable of rocking movement or radial movement to the broad degree claimed.” The Examiner referenced Fig. 2.

However, in the electromagnetic suspension system in figure 2, a first cylindrical member, and outer yoke 14, is fixed to a rod 11. A second cylindrical member, a center yoke 15, is fixed to a cylinder 10. As such, because these respective components are fixed with respect to each other, rocking movement and radial movement are not permitted.

It is not clear exactly what the Examiner refers to when the Examiner refers to a connection in Yusuke. If the Examiner’s reference is to member 12, it is noted that the member 12 permits rocking movement or radial movement of the rod 11 relative to an upper mount 9, and not a first cylindrical member such as member 14.

Claim 17 makes it clear that the first cylindrical member is connected to the rod to prevent relative movement in the axial direction of the rod and that the second cylindrical member is connected to the cylinder to prevent relative movement in the axial direction of the cylinder. Further, at least one of the first cylindrical member and the second cylindrical member is capable of radial movement or rocking movement relative to the

rod and cylinder, respectively. Thus, claim 17 clearly serves to distinguish over the fixed arrangement of Yusuke.

The Examiner's reference to "the broad degree claimed" is noted. However, claim 17 specifically requires that the first or second cylindrical member be capable of radial movement or rocking movement relative to the rod or cylinder. There is no provision made for such in Yusuke as the respective members are fixed with respect to each other.

The Examiner further cited VanSweden for the proposition of a spherical bearing 46 between cylinders and a shock absorber. However, there is no suggestion from VanSweden so as to combine VanSweden with Yusuke in any proper manner that would result in the presently claimed invention.

VanSweden is directed to a suspension system for supporting a road wheel of a track laying vehicle such as an armored tank. The object of VanSweden is to provide an improved suspension system for a road wheel of the track laying vehicle by a suspension liquid in order to eliminate problems that are associated with the prior art torsion bar and gas suspension systems. A cylinder 42 of the suspension system has a cylinder housing 44 having a swivel bearing 46 that mounts the cylinder housing for swiveling movement on the support arm. The environment of VanSweden is thus clearly quite distinct from that of the present invention.

In the present invention, a lateral force acting on the shock absorber can create a sliding resistance to be generated between the outer yoke and the center yoke, thus preventing smooth operation of the shock absorber. This is addressed by the invention as claimed.

Yusuke does not recognize any such problems. As such, there is no suggestion or motivation to make any combination of VanSweden with Yusuke. That is, the prior art does not recognize any problem with the arrangement of Yusuke. VanSweden does not relate in any sense to an electromagnetic suspension system as claimed. Rather, it is directed to a suspension system for a tank, which necessarily involves rather different considerations. One of ordinary skill in the art would not have been motivated to look at VanSweden for any proper combination with Yusuke. There is no suggestion of any problems in Yusuke that might be addressed by VanSweden, furthermore.

By contrast, the present inventors have realized an effect of substantially uniformly maintaining a radial gap between an outer yoke and a center yoke with the claimed invention. In VanSweden, there is no member that corresponds to the outer yoke. Thus the problem is described with respect to the present invention would not occur. Thus, it is not seen how one of ordinary skill in the art would have motivated to attempt any combination therebetween.

From the above, it is respectfully submitted that claim 17, along with its depending claims, clearly distinguish over both Yusuke and VanSweden. Indication of such is respectfully requested.

The Examiners attention is further directed to new independent claim 20, which recites the present invention in a somewhat different form, but to the same purpose. This claim distinguishes over both Yusuke and VanSweden for the same reasons.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance, and the Examiner is requested to pass the case to issue. If the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact Applicants' undersigned representative.

Respectfully submitted,

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